

**Watercourse Classification Module
for the
Timberland Planning Component**

**California Department of Fish and Game
Northern California - North Coast Region
Interior Timberland Planning Team**

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Resource Issue

The California Forest Practice Rules (FPRs) define watercourse classification in Section 936.4 and the corresponding protection measures for timber harvesting activities. The correct identification and corresponding classification of watercourses is necessary to provide adequate watercourse and lake protection zones (WLPZs) for the protection of aquatic resources and maintenance of riparian function. These WLPZs provide water temperature protection, streambed and flow modification by large woody debris, filtration of organic and inorganic material, upslope stability, bank and channel stabilization, spawning and rearing habitat for salmonids, and vegetation structure diversity for fish and wildlife habitat. This structure includes vertical diversity, migration corridors, nesting habitat, roosting areas and escape cover, nutrient sources, microclimates, snags leaf litter/ground cover and landscape diversity.

The different species and life phases of salmonids have diverse habitat requirements. Streams that support them must sustain a varied complex of hydraulic and geomorphic conditions that are distributed along the stream continuum. The close relationship between watershed properties and stream characteristics has been repeatedly emphasized and serves as a good approach for understanding how forest management influences fish habitat (Meehan, 1991).

Natural resource use and extraction leading to habitat modification can have significant direct and indirect impacts to salmon populations and other aquatic resources. Land use activities associated with logging, road construction, urban development, mining, agriculture, and recreation have significantly altered fish habitat quantity and quality. Associated impacts of these activities include: alteration of streambanks and channel morphology; alteration of ambient stream water temperatures; degradation of water quality; reduction in available food supply; elimination of spawning and rearing habitat; fragmentation of available habitats; elimination of downstream recruitment of spawning gravels and large woody debris; removal of riparian vegetation resulting in increased stream bank erosion; and increased sedimentation input into spawning and rearing

areas resulting in the loss of channel complexity, pool habitat, suitable gravel substrate, and large woody debris.

Salmonid species on the west coast of the United States have experienced dramatic declines in abundance during the past several decades as a result of human-induced and possibly natural factors. There is no single factor solely responsible for this decline. Given the complexity of the salmon species life history and the ecosystem in which they reside, it is difficult to precisely quantify the relative contribution of any one factor to the decline of a given species. Rather, given the available data, it is only possible to highlight factors which have significantly affected the status of a particular species. Although timber harvesting is not the only cause, it may be a contributing factor in the decline of many stocks. To help reverse this decline, land managers have come to recognize the need for increased protection of stream habitat in areas managed for timber production and increased efforts to restore streams degraded by past timber harvest (Murphy, 1995).

Several amphibian and reptile species which, until recently, have been largely ignored by resource management agencies and timber companies are also associated with forested watercourses. These species have specific habitat requirements that include canopy cover and large woody debris. Many other wildlife species rely on riparian zones for migration corridors, nesting and roosting sites, food and many other functions.

The correct identification of watercourses is necessary for providing protection for fish and wildlife resources. Incorrect watercourse classification occurs on timberlands, but this error appears to be due to the lack of information regarding biology, hydrology and geomorphology.

Goal

- Ensure protection of aquatic resources through correct watercourse classification.

Objectives

- Provide information/education to timber companies and Registered Professional Foresters (RPFs) on aquatic biology, hydrologic processes and geomorphology to use in the classification of watercourses under the FPRs
- Promote the importance of watershed products (wood, heat, sediment, nutrients, water) to aquatic resources and the potential impacts from timber operations
- Provide the Interior Timberland Planning Team (Team) staff time to conduct surveys to gather fish distribution data

Strategic Plan

The recent changes in the FPRs pertaining to watercourse protection and increased regulatory review of timber harvesting plans (THPs) has re-emphasized the need for proper watercourse identification. With the aid of other agencies and the Forest Reptile and Amphibian Working Group (FRAWG), the Team will promote and provide education for timber company staff to better understand watercourse classification under the FPRs.

The North Coast region FRAWG sub-group provided similar training in 1997 and 2001 in Korb, California. The course content would be adapted to address the conditions found in the interior counties of northern California. A one to two-day workshop would include lecture and field instruction on watercourse classification as defined in the FPRs and include instruction on aquatic macro-invertebrates, obligate wetland and riparian plants, and how to use these and other indicators in the proper classification of watercourses.

DFG fisheries biologists/Team staff are available for electrofishing surveys on timber company land in watersheds where information is lacking regarding fish distribution. Range and species composition surveys on private lands would enable better protection of fish species. This information could help prevent take from occurring while other incentives for this effort could be developed.

Monitoring

Monitoring watercourse classification will mainly become an implementation monitoring process by the Team conducted via preharvest inspections (PHIs) on THPs and random post-harvest inspections. Implementation monitoring in the field will verify if companies are actually using the aquatic and hydrologic indicators that were presented during the training on watercourse classification along with appropriate watercourse protections.

Adaptive Management

The feedback from workshop attendees will help to improve future workshops if warranted and/or requested. Evaluation forms will be provided to workshop participants for feedback. The error rate of watercourse classification on THP's found during PHIs and post-harvest monitoring should indicate the need for modifications in the training and the need for future training.

Measures of Success

Success will be measured by the extent to which the following are met:

- The number of RPFs attending the workshop
- Positive feedback from RPFs attending workshop
- Requests for additional workshops
- Increase of correct watercourse classification in the field
- Establish better working relationships between the Team and the timber companies

- Better communication is established between the Team and timber companies regarding protection of aquatic resources

References

Meehan, W. R. (editor) 1991. Influences of forest and range management on salmonid fishes and their habitats. Special Publication 19. American Fisheries Society, Bethesda, MD.

Murphy, M. L. 1995. Forestry impacts on freshwater habitat of anadromous salmonids in the Pacific Northwest and Alaska-Requirements for protection and restoration. Decision Analysis Series No. 7. US Department of Commerce, NOAA Coastal Ocean Program, MD.